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HIGHER CHYMASE DEPENDENT ANGIOTENSIN II-FORMING ACTIVITY IN THE CIRCULATING MONONUCLEAR LEUKOCYTE IS A SIGNIFICANT CONTRIBUTING FACTOR FOR ATRIAL FIBRILLATION

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Background: Chymase is angiotensin II forming serine proteinase and its higher activity is associated with development of various cardiovascular diseases. Several basic and clinical studies indicated association between the activated rennin-angiotensin system and occurrence of atrial fibrillation (AF) but, there has no report about angiotensin II (AII)-forming proteinase activity and AF. The purpose of this study was to investigate the chymase dependent AII-forming activity (dAIIFA) in the circulating mononuclear leukocyte (CML) in the patients with AF.

Methods: Consecutive out-patients (n=512) in our hospital were recruited and classified into AF (n=49, including paroxysmal AF) and normal sinus rhythm (NSR) (n=463) groups by the direct analysis of recorded ECG. Chymase dAIIFA in the CML was measured using the Nma/Dnp type fluorescence-quenching substrate of the modified angiotensin I in the presence or absence of a specific chymase inhibitor. To identify the relation between occurrence of AF and chymase dAIIFA in CMLlogistic regression analysis was performed adjusting for age, gender, C-reactive protein, history of hypertension (HT) or coronary artery disease (CAD), and administration of angiotensin-converting enzyme inhibitor or angiotensin II type 1 receptor blocker.

Results: Logistic regression analysis revealed that independent contributors for existence of AF were age (P<0.0001), HT (P=0.08), CAD (P=0.06) and chymase dAIIFA in CML (P=0.007). In AF group, larger left atrial diameter (LAd) in ultra-sound-cardiogram was observed compared with NSR group (P<0.0001).In addition, chymase dAIIFA positively correlated with the LAd in all subjects (p <0.01).

Conclusions: Elevation of chymase dAIIFA in CML was associated with the presence of AF and the increased LAd indicating that the activated chymase dAIIFA might be linked with atrial structural and electrical remodeling.